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U. S. DEPARTMENT OF AGRICULTURE.
OFFICE OF ROAD INQUIRY.
BULLETIN No. 2.

PROCEEDINGS

OF THE

MINNESOTA GOOD ROADS CONVENTION

HELD AT

ST. PAUL, MINN.,

JANUARY 25, 26, 1894.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF ROAD INQUIRY,
Washington, D. C., February 28, 1894.

SIR: The proceedings of the convention of the Minnesota Road Improvement Association will be of interest throughout the Northwest, and I would respectfully recommend their publication in a condensed form.

ROY STONE,
Special Agent and Engineer in Charge.

Hon. J. STERLING MORTON,
Secretary of Agriculture.

CONDENSED REPORT OF THE PROCEEDINGS OF THE FIRST ANNUAL MEETING OF
THE MINNESOTA GOOD ROADS CONVENTION.

[Convention held in St. Paul, Minn., January 25, 26, 1894.]

JANUARY 25—MORNING SESSION.

Three hundred and fifty-five delegates were assembled in the hall of the Chamber of Commerce when the first Minnesota Good Roads Convention was called to order by Mr. A. B. Choate, of Minneapolis, who addressed the convention as follows:

ADDRESS OF A. B. CHOATE.

Gentlemen of the convention: About one year ago the Farmers' Alliance, in session in State convention, passed a resolution to the effect that the highway question had not received its fair share of attention by the State legislature, and demanding such legislation as its importance deserved. Another of the leading parties of the State did likewise; and at its annual meeting last September the Minnesota division of the League of American Wheelmen appropriated \$100 to pay the expenses of organizing a convention for the purpose of setting in motion what those resolutions called for, and appointed a committee to effect the organization. The St. Paul Chamber of Commerce, appreciating the importance of the movement, appointed Gen. C. C. Andrews to cooperate with the league committee. A call was sent out last October apportioning two delegates for each Senator and Representative, asking the county commissioners to appoint delegates or call mass meetings for the purpose. The \$100 has been expended in correspondence and printing, and you see the result to-day—one which is very gratifying.

Mr. Choate then called for the election of a temporary chairman and secretary.

Hon. Henry R. Wells, of Fillmore County, and Mr. F. L. Hoxsie, of St. Paul, were elected.

In accepting the temporary chairmanship Mr. Wells thanked the convention for the unexpected honor, and alluded to the general interest being taken in this great economic question. He said:

While giving our attention to railway construction to bring markets nearer our homes we have strangely neglected to bring those markets to the farmer's door by the simplest and most necessary means, to wit, the construction of the necessary highways. The question before us is one of method. We need legislation.

He suggested that—

this convention do not go too fast, ask too much, nor take the question of road-building too far from the communities where these delegates belong.

A committee on credentials was then appointed, consisting of Messrs. A. B. Choate, Minneapolis; W. H. Grant, Pine County, and J. M.

Johnson, Nicollet County; also a committee on permanent organization—Messrs. C. D. Belden, Mower County; J. B. Paul, A. T. Ankeny, Hennepin County; H. Ostrander, Lesueur County; C. H. Strobeck, Meeker County.

Acting Mayor Hon. F. G. Ingersoll was introduced and addressed the convention, expressing the pride St. Paul felt in welcoming this, the first good roads convention held in this State. He said:

Its object, highway improvement, will bring nearer the home of every farmer the means of education, schools, and churches, and banish the isolation resulting from distance and bad roads. Commercial interests also demand highway improvement. Bad roads are expensive; they cost time and labor and tax vehicles and the commodity transported.

Hon. C. D. Gilfillan, farmer, of Redwood County, being called, said:

The first object of this convention should be to form and cultivate the right sort of public opinion. There has been enough work done and taxes paid to have pretty fair roads throughout the State, but in many parts of it they are shameful and will continue so until we get the right sort of public sentiment. There is such a thing as civil patriotism, and it is of a much higher order than war patriotism, and where that sentiment is aroused we will have roads that will not be burdensome in the way of taxation, for good roads are easily maintained if the work be done well and intelligently. The people living where roads are built must build them.

In response to cries of "LaDue," Senator Jay LaDue, from Rock County, said:

I do not come here with a view of laying down principles to govern this convention, but do wish to indorse the sentiments of the gentleman who preceded me. We must arouse a feeling for better roads in our districts, and, as he said, our efforts should be at home first. I hope such an interest will be aroused that every farmer will take hold to improve the road and so benefit his farm and home. I hope my colleague, Mr. Grout, will be heard from.

Mr. Grout responded, saying that, being aware that as farmers we are conservative, he had endeavored to get the people in his community to discuss whether or not there was a better way to utilize the tax so liberally voted for roads. He hoped some modifications of the existing road laws to secure more systematic work might be suggested to the legislature.

Mr. McKinstry, of Rice County, said that he had earned his living for four years working country roads; that the only way to make this movement a success was to assess road taxes in cash instead of labor. "Make the tax light. Most townships assess 5 mills in cash; 1 will be enough."

Mr. Strobeck, of Meeker County, also urged cash road taxes. His county's experience in having all bridges built under the supervision of the commissioners had proved so successful that they now thought of placing the road work under their supervision, the work to be done by contract and on leading lines of roads at first, expecting in a few years to have a pretty fair road system without greater expense, and, perhaps, with less than at present.

Prof. W. W. Pendergast was then introduced by Chairman Wells, and read a paper, extracts from which follow:

ADDRESS OF W. W. PENDERGAST.

Civilization and culture have always gone hand in hand with business relations and social intercourse. The more closely men are brought into contact the more they learn to appreciate the good that is in all, and to recognize the common bond which should unite them in one great brotherhood. To secure a healthy and desirable condition the people of a settlement must be, in the highest sense of the word, neighbors, whom common tastes and identity of interests have thrown into juxtaposition, else the civilizing influences will be in great measure lacking.

Now, every impassable road is an insuperable barrier to local advancement, cutting off all intercommunication and closing all avenues which lead to social and intellectual development. For the highest good of any community it is quite essential that facilities be established for communication with the outside world, especially with the great centers of civilization, literature, traffic, and art. This may be carried on by travel, or through the medium of the mail service, preferably by both, but bad roads obstruct both. Men of literary tastes, compelled by the wretched roads to forego the benefits of the daily mail, soon discover that the habit of reading is being gradually weakened, and their minds becoming inert by disuse. The highest intelligence, coupled with a general knowledge of the current history of our times, is almost impossible without daily access to the columns of our enterprising journals.

Good roads will metamorphose the present unfortunate state of affairs in country towns and introduce the advantages, the polish, refinement, and civility now supposed to exist, almost exclusively in cities. The quickened intelligence and stimulated thought which result from the constant watching of the political, scientific, and religious movements going on will largely banish the mental vacuity which sooner or later takes possession of those whom circumstances consign to isolation.

It will be found impracticable, even in so good a cause, to adopt any revolutionary measures involving great and unusual expense without the intervention and assistance of the State. Farmers will not vote upon their towns high taxes necessary to meet the requirement of establishing and keeping in repair roads good enough to meet the present demand.

Whenever, by a "long pull, a strong pull, and a pull all together," we can secure such delightful highways as those along the seacoast in Massachusetts, between Salem and Gloucester, it will be a positive pleasure not merely to ride over them with a light team in a spring buggy, but even to take heavy loads to market; and the worst dreaded and most obnoxious phase of rural life will have become a thing of the past. Then farmers, instead of being the most discontented, fault-finding, and despondent of mortals, will be the happiest, most independent, and most envied. Everyone's income is divided into two parts; one of these he is compelled to make use of in supporting existence, the second part is disposed of in the way which his judgment tells him will be best. This leads to the inquiry whether our surplus is judiciously spent. Are we buying the greatest amount of comfort and permanent good with the portion left at our disposal? Would not model roads be of greater benefit than our tobacco, liquor, tea, circus and other show moneys bring? Would they not more than balance the good times we have hauling our produce through miles of mud, at such fearful cost, in extra labor, repairs, horses, oats; in wear and tear of conscience and damages to character?

It is certain that bad roads make weak, struggling churches and poor, ill-attended, lifeless schools. They necessitate a life of seclusion which walls the path of social progress.

To sum up, a perfect highway is a thing of beauty and a joy forever. It blesses every home by which it passes. It brings into pleasant communion people who

otherwise would have remained at a perpetual distance. It awakens emulation, cements friendships, and adds new charm to social life. It makes the region it traverses more attractive, the residences more delightful; it stimulates a spirit of general improvement. Fields begin to look tidier, shabby fences disappear, gardens show fewer weeds, lawns are better kept, the houses seem cosier, trees are planted along its borders, birds fill the air with music, the world seems brighter, the atmosphere purer. The country is awake, patriotism revives, philanthropy blossoms as selfishness fades and slinks from view. The schoolhouse and the church feel the magic influence—the wand of progress has touched even them; the old are young again, the young see something now to live for, and to all life seems worth the living. The daily mail reaches each home. The rural cosmopolitan “feels the daily pulse of the world.” Wheelmen are no longer confined to the cities. Bicycles, now within the reach of all, are no strangers among farmers. The golden days of which the poets long have sung are upon us. The dreams of the past are coming true. Nothing can thwart the will of fate. Put your ear to the ground even now and you will hear the footfalls of the “good time coming.”

JANUARY 25—AFTERNOON SESSION.

Mr. A. B. Choate, chairman committee on credentials, submitted a report.

Mr. C. D. Belden, chairman committee on permanent organization, submitted the following report, which was accepted, and nominees elected:

Chairman, Hon. H. R. Wells, Fillmore County.

Secretary, F. L. Hoxsie, St. Paul.

Assistant Secretary, R. V. Pratt, St. Paul.

Hon. H. R. Wells, in accepting permanent chairmanship, congratulated the convention upon the auspicious opening of this meeting and the expeditious transaction of business, also again advised not to go too fast or too far; sufficient if assessments are made payable in cash and disbursed by proper authorities, keeping it as close to the people as possible.

Mr. Buell, Ramsey County, moved the appointment of a committee on resolutions, and motions were made for the appointment of committees on permanent State organization and on the finances of this convention.

Gen. C. C. Andrews, of St. Paul (U. S. minister to Sweden and Norway, 1869-1872), was introduced, and read a paper, “European roads,” a synopsis of which follows:

ADDRESS OF GEN. C. C. ANDREWS.

The writer stated that the home where he was born, in Hillsboro Upper Village, N. H., stood beside the turnpike leading from Boston to Windsor, Vt. He remembered the toll-gate, on that road, which was discontinued about fifty-five years ago, and the lively traffic upon the road in those days—heavily laden, 6-horse, covered wagons, two or three in company, which made regular trips; the 6-horse stage, droves of fat cattle and sheep for the Brighton market; in winter trains of sled teams loaded with dressed hogs and other farm products from Vermont; in sum-

mer populous caravans of immigrants from Canada to Lowell. The road was made of the loam and gravelly soil of that region, was originally well crowned and drained, the culverts being of granite boulders. In the winter of 1855-'56 he made a journey from Washington City to New Orleans, of which the part from Louisville to Nashville was by stage over a fair road. From Nashville he went in a carriage to the Hermitage, a distance of about 15 miles and back. The road was smooth, hard, and beautiful and impressed him as being the finest road he had up to that time ever seen. During that journey he drove over the Magnolia road at Mobile and the Shell road at New Orleans, both of which were then noted for excellence. In the civil war he became acquainted with some of the roads in six Southern States, including Texas. Tennessee probably then had the best roads of any State. In Central Park, New York, he had seen as perfect macadamized roads as anywhere exist.

The originator of macadamized roads was John Loudan Macadam, who was born at Ayr, Scotland, September 21, 1756, and died in Scotland November 26, 1836. He came to this country at the age of 14, married here, and returned to Scotland in 1783. During the seventeen years previous to 1815 he traveled 30,000 miles and spent \$20,000 to examine roads in Great Britain. In 1816, as surveyor-general of the district of Bristol he commenced carrying his system into operation. The principle of his system is simple. It is: (1) That the natural soil will answer for the foundation for a road, if thoroughly drained; (2) that the surface should consist of a layer from 6 to 10 inches thick of hard stone, best of all, granite, evenly broken to a size that will pass every way through a ring 2½ inches in diameter, using no binding material like fine gravel or sand, but leaving the broken stone to work in and unite by its own angles under the traffic. On first visiting Europe in 1869, the writer was deeply impressed by the extent and beauty of the macadamized roads in England and France, and especially in the noble parks which are the pride of their great cities. In visits made at different times in nearly every European country and as far south as Naples, he particularly noticed and admired their macadamized roads, which are common on all main lines of travel. Sweden and Norway are not behind other countries in such roads. In 1891 the Department of State, Washington, D. C., published a document of 592 octavo pages comprising consular reports on streets and highways of foreign countries and furnishing the fullest and latest information on European roads. An example is there cited of a good macadamized road in Germany which cost only \$3,646 per mile. The macadamized roads of Europe proved in the long run economical and were a source of comfort and prosperity.

Mr. George B. Sublette, assistant city engineer, Minneapolis, was then introduced and read a paper on "Pavements and roads in cities and towns," of which the following is a synopsis:

ADDRESS OF GEORGE B. SUBLETTE.

The author defines pavements as roads designed to meet a very heavy traffic and at the same time combine economy of cost of construction and maintenance, be pleasing in appearance, easy upon vehicles, animals, and passengers, and, finally, healthful. He states that America has less to show for the money expended on roads and pavements than any civilized country on the globe. He quoted the following from the investigations of Mr. Rudolph Herring as to cost and maintenance of pavements for a period of fifteen years in London, Paris, Vienna, and New York:

Material.	Construction.	Maintenance.	Total.
Black stone.....	\$4.00	\$1.05	\$5.05
Asphalt.....	3.65	2.25	5.90
Wood.....	3.40	3.16	6.56

From scientific deductions of different writers it is ascertained that for a street of 100,000 tons of traffic per year on each yard of width, macadam is the most costly and wood the next. The following table shows the relative cost of asphalt and granite under the same traffic as above for a period of fifty years:

	Granite.	Asphalt.
Cost of construction	\$4.60	\$3.75
Interest, 3 per cent sinking fund, fifty years.....	.27	.22
Annual maintenance.....	.04	.10
Three renewals of surface, at \$2.50.....	.15	.18
Four renewals, at \$2.25.....		.18
Total46	.50

From this he concludes that, while granite is the cheaper, its destructive qualities to vehicles and increased cost of transportation make asphalt the more to be desired.

From tables of traction he deduces the conclusions that, for speed and heavy loads, a road must be smooth and hard; that heavy loads demand a large wheel and wide tire, while for light loads the narrower the tire the better. The writer further shows that cities make mistakes in constructing high curbs, which give too much crown to street surface, and in so paving intersections that the street can not be fully utilized for traffic.

Mr. Illis, Carver County, said that while the roads in his county were pretty good, the thing to do, he believed, was to build just such roads as Gen. Andrews and Mr. Sublette suggested—macadam. They will be quite as cheap as those gentlemen have stated.

Mr. Case, of Fillmore County, urged the collection of road taxes in money, the repair of roads by lowest bidder under contract, and the abolition of the little road districts in which, as an old Irishman in his county said, the hardest work done is “watching the sun go down.” He continued:

Select a competent road overseer; pay him a living salary, so that he can devote all his time to our highways in as large a district as he can cover. Since 1860 we have spent enough money to build a stone road north, south, east, and west to and from every township in the county, and still our roads don't amount to anything. A law was passed several years ago appropriating \$100,000 for a horse trot between Minneapolis and St. Paul. Have we ever received \$100,000 to put on the roads of the State of Minnesota?

Mr. Armstrong, of Washington County, advocated the special construction and care of main roads leading to market towns.

Mr. Petteys, of Rice County, proposed placing roads in the hands of county commissioners, bringing work as near the people as possible. His county had rock, gravel, and clay in abundance, so had no excuse for not having good roads. The State at large might not have macadamized roads for the present, but would have to get along with dirt and gravel.

After some further discussion the chair appointed the following committees:

On finance.—Hon. C. D. Gilfillan, Gen. C. C. Andrews, and R. R. Greer.

On resolutions.—D. J. Buell, of Ramsey; E. L. Grout, of Rock, and W. H. Grant, of Pine County.

On permanent State good roads association.—A. B. Choate, of Hennepin; A. P. McKinstry, of Rice; W. W. Swett, of Hennepin. (Delegates of each Congressional district were requested to select two members of this committee.)

JANUARY 25—EVENING SESSION.

Mr. A. B. Choate, of Minneapolis, read a paper on “Bad roads—cause and remedy, needed legislation suggested,” a synopsis of which is given below:

ADDRESS OF A. B. CHOATE.

Our form of government makes it impossible to treat the road-improvement question in the same manner in which it has been treated by the monarchs of the Old World. For this reason general discussion, investigation, and education are the first steps; then legislation.

The root of the bad-roads evil in Minnesota is our lack of a practical, business-like system, the principal defects of which are—

(1) Men who are incompetent and inexperienced are permitted to work out their road tax instead of paying it in money.

(2) Eleven thousand incompetent, inexperienced, petty road overseers have the supervision of the incompetent men who “work the roads,” at an annual expense for this incompetent supervision of \$160,000 in cash, in addition to the road tax worked out by each of these overseers.

(3) Our laws do not permit the issue of bonds to build permanent roads. The present generation is unable to build them, and if it were able it would be an injustice to require them to do so, for if permanent roads, good for a hundred years, are built, following generations will receive a benefit equal to that received by those who build and pay for the roads. There is no more justice in taxing Mr. Smith of this generation for the benefit of Mr. Jones of the next, while Mr. Jones goes free, than there is for a like practice applied to Smith and Jones of the same generation.

(4) Five hundred thousand acres of railway land grant in the northern part of the State is untaxed. The remaining taxable lands are unable to bear the burdens necessary to build permanent roads.

(5) Our constitution prohibits the State from aiding in highway improvement.

(6) Our constitution prohibits assessing local highway improvements to abutting property, except in cities.

Recommendations.

(1) Change the laws in the respects above indicated.

(2) Classify highways, according to importance, into State, county, and township roads.

(3) Constitute State, county, and township highway commissions to supervise the three classes of highways.

(4) Authorize the State highway commission to lay out and furnish plans and specifications for State roads, and require and enforce the building of the roads according to plans, partially at State expense, thus preventing a shiftless or igno-

rant neighborhood or a disagreement between adjoining county authorities from causing a break in an important thoroughfare.

(5) Railroads have made national wagon roads unnecessary, and while in a sense road improvement is of national importance it is mainly a local matter. Therefore roads should be built at a local expense and by a sort of partnership arrangement, the credit of State and nation should be used to obtain loans at a very low rate of interest, and the State and nation be secured by a sort of mortgage on the taxing power of the localities where the money is used.

Messrs. H. S. Fairchild, of Ramsey County, and A. P. McKinstry, of Rice County, made remarks upon the paper, the latter again urging cash road tax and encouraging the building of good prairie roads, which he said could be done for \$100 per mile, and kept in repair for \$10 to \$15 per mile per year, over which could be drawn loads of 2 or 3 tons.

Mr. John D. Estabrook, of St. Paul, for fourteen years superintendent of roadway construction of the city of Philadelphia, was introduced, and read a paper on dirt roads—practical suggestions as to building in Minnesota, a condensed report of which is given:

ADDRESS OF JOHN D. ESTABROOK.

It is probable that Minnesota can not at first compete with older States in the way of common road improvements, except in so far as nature has supplied her with superior road-building material. She should, however, insist on wiser locations for her chief highways, and not permit abutting property owners to say that such roads shall be confined to the boundaries of Government rectangles and be made to lead across marshes and over ridges, when deviations in the courses would avoid obstructions and not only make the road grades better, but make the adjoining fields more uniform in surface character, if not in outline.

A field that consists of mixed patches of tableland, hillside, woodland, and marsh is of about as much intrinsic value as the road that is made to struggle, in a straight line, along one of its boundaries. A general map of the country showing water courses, railway lines, stations, principal towns and their populations, will generally enable an engineer to determine by inspection where the chief thoroughfares should be located, or at least where it will be wise to make critical examinations and possibly surveys. A few good roads are vastly more serviceable to the community than a multitude of ordinary ones.

Let us add to the length of each road an equivalent for the extra effort expended in climbing its steep grades, and we shall soon see the economy of avoiding hills. The general character of the country must, in a measure, determine the limiting grades. Since the steepest grade on a well-kept road determines the maximum load that can be hauled, it is evident that a rise of 1 in 20 in a generally level country may be as objectionable there as a grade of 1 in 10 would be in a specially hilly region.

For short distances the draft horse can readily double his ordinary working effort, and this is about the amount of extra force needed on a dirt-road ascent of 1 in 20, consequently that grade is the desirable maximum. Again, to insure proper drainage, there should be no level roads.

Dirt roads should have a minimum grade of 1 in 100, and be provided with ample side ditches having frequent outlets that will entirely empty them. Mud on the surface and a surplus of moisture in the substratum must be avoided. Through extensive deposits of clay or river silt it may be necessary to introduce tile drains. This is more important in regions further south where the climate is milder, with frequent alterations of freezing and thawing temperatures.

It is well to keep in mind the definition, "dirt is mud with the water drained out," and to secure for our roads ample provisions for drainage. We want a narrow, good road; say 16 feet in width of carriage way, crowned 6 inches in that width, and having its surface strengthened with sand where the grade material is too sticky, and with clay where it is too sandy.

A road located and built as above can generally be well maintained in Minnesota, with reasonable care and expenditure as a dirt road; but whenever the conditions are favorable it is wise to further improve its surface with good gravel, macadam, or a pavement, remembering, however, that it is always necessary to have first a good dirt road.

Mr. W. S. Chowen, of Minneapolis, followed with a paper on "Repair of dirt roads," from which the following is taken:

ADDRESS OF W. S. CHOWEN.

Road repairing is an art in which it takes much experience to become an expert, nevertheless the law requires each town to elect four to eight road overseers every spring, who, lacking practical knowledge, proceed to waste money, labor, and material.

I have no knowledge of the theoretical, but of only the practical side of this question. It is not economy to repair a badly constructed road. First make it good, then keep it so.

The first requisite for the proper care of dirt or gravel roads is a kit of tools, which should include, with other tools—

	Cost.
1 roller, 3 to 5 tons.....	\$380
1 road grader.....	200
2 No. 2 wheel scrapers, at \$50.....	100
2 slush scrapers, at \$6.....	12
1 pole or Chicago scraper.....	10
1 road plow.....	20

One expert road-maker, competent and familiar with the use of the material in the district, should have entire charge of the construction and repair of all roads in a township, giving bonds for the faithful performance of his duties. He should be given a sufficient number of assistants to secure a constant oversight of all roads at all times, especially new ones, which must be guarded against ruts and depressions in which water can accumulate and soften and destroy the roadbed.

General repairs.—Drainage is of great importance. Thoroughly drain a hole or rut before filling it. For quick job repairing with gravel, dampen and keep it so until packed hard. On hard-baked ruts use heavily loaded roller—a sharp-toothed harrow will help—then the grader to shape surface, then roll hard. Seed all slopes, both cuts and fills, to make stiff sod to prevent washing.

Wide tires.—These should be used, and a portion of the taxes abated for each teamster adopting them.

Brevities.—Never scour your plow in the road ditches; never throw a stone from the field into the road; never drive into the road to turn when plowing; never plow road ditches full.

The two foregoing papers were freely discussed by Cumming, of Becker; Hazzard and Buell, of Ramsey; Woodward, of Carlton; and Rees, of Hennepin. The latter advocated the frequent repair of roads, as soon they needed it, and that the office of road overseer be abolished; which officer, however, he defended from the charges of

incompetency so freely made, presuming, he said, that all of us would be in precisely the same situation, and would be equally incompetent under the same circumstances. They are not scientific road-makers and can not be expected to be more perfect than we are. Supervisors should be elected for more than one year, thus enabling them to carry out, to some extent at least, their ideas of road repair.

JANUARY 26—MORNING SESSION.

Mr. Schneider, of Ramsey County, read a short paper in which he made the following points:

The great difficulty to be overcome in making good roads is in getting full value for the money and time expended. A remedy would be to have the work done by contract, both making and repairing. Counties and townships would thus be relieved of buying and holding a lot of expensive road tools.

There should be a superintendent of roads in each county, who should be competent to instruct and supervise road builders and repairers. He should properly be the county surveyor. He could advise county and town boards as to appropriations and O K bills. He should prepare a map of the roads, with suitable geographical and topographical description. Such officer, if elected, should be subject to removal for cause by the county commissioners, and should act under a central authority.

Mr. Smith, of Dakota County, wished to remark in regard to letting work by contract that the experience of his county was that it was not wise to make it mandatory, but that it should be left optional with the authorities.

Mr. Dickey, of Hennepin County, believed in contract work, and referred to the practice of railroads who generally look out for No. 1; he also called attention to the fact that the several counties throughout the State collected last year \$18,733,068, and, for the same period, spent on roads only \$198,089 [a little more than one per cent.—SECRETARY.], which is a very small proportion, considering their importance.

Mr. Farnham, of Wright County, referring to Mr. Chowen's paper, mentioned a piece of gravel road which Mr. Chowen built through a timbered country three years ago at an expense of a little less than \$300 per mile, which has been kept in thorough repair and is to-day in perfect condition, permitting the hauling of 7,500 pounds by a team that could haul perhaps a ton before. He thought that macadam roads cost too much for his State at present.

Chairman Wells called attention to the fact that La Crosse, Wis., was building macadam road for less than \$5,000 per mile, while the streets of his own village had been macadamized at a merely nominal cost. He suggested that careful consideration should be given to the question of repealing the law relating to poll taxes.

Mr. Cartagen, of McLeod County, suggested the advisability of using convict labor upon public highways and thus reducing their cost.

Dr. Jackson, Rice County, having for thirty years driven over the roads of Minnesota, pronounced them execrable except for three

or four months of the year. The doctor said he was amused by every speaker in every convention boasting about the "great State of Minnesota"—about her great resources and wealth, but when it comes to a good road "we can not afford it." In case of sickness one can reach a doctor much quicker over a good road, and he can attend your family quicker over a macadamized road than through mud hub deep. If you want macadamized roads don't let the cost deter you; just let it be announced that Minnesota proposes macadamizing her roads at \$3,000 per mile, and some one will provide them at that price, or even less.

E. J. Hodgson, of St. Paul, was then introduced to the convention, and read a paper on "A State Good Roads Association," of which the following is an abstract:

ADDRESS OF E. J. HODGSON.

I suppose we have nearly 100,000 miles of wagon roads of one kind or other in the State of Minnesota, while we have less than 6,000 miles of railroads. It is safe to say that these wagon roads carry fully as much traffic as the railroads and probably more. While the railroads run through the more densely populated parts of the country, the wagon roads radiate out to every flock and field and touch at the door of every rural homestead. The railroads have cost us about \$240,000,000, and are expected to earn dividends upon that amount. What the wagon roads have cost we have no data even for conjecture.

In every respect, then, for which we have any data for comparison, the wagon roads are at least of as much importance to the individual and the public as are the railroads; and yet every one seems to attach vastly more importance to the latter than to the former. It is generally believed that the railroads have not actually cost the enormous sum at which they are charged up to the public, but that a large proportion of their capital represents the gains of private persons, side corporations, etc., and there has been a perpetual howl against these alleged iniquities. I have no intention or desire to raise this discussion here, and I mention the fact merely to say that if the cost of railroads has been padded to the fullest extent claimed by the public, that even then the excess of apparent over actual cost would be insignificant in comparison with what has been wasted by reason of the inefficient, impractical, unskillful, and slipshod methods pursued in wagon-road building.

While, then, we should not abate our vigilance in preventing extravagance and unnecessary cost in railroad building, we should be at least equally alive to the fearful waste and mismanagement in wagon-road making. We must do away with the system of "working out" road taxes and adopt the cash system. Road-making must be placed under competent and skillful management and supervision, and until this reform is accomplished we shall simply plow and plunge and drag along through mud and sand and slough. The trained road-builder is just as necessary as the trained doctor, manufacturer, or educator. And what will be the result of the betterment of the roads? Tremendous increase in the values of country property, facilities for doing farm business that will distance all slower competitors, and beyond this, far greater happiness for the farmer, his wife, his sons, and his daughters. Nothing speaks more loudly for the thrift, intelligence, and progressiveness of a community than the kind of roads they have. Good roads have the same effect as shortening the distance to be traveled, and in these days of fierce competition the man who has shortened the distance to his market has gained a great advantage.

But the very importance of this work admonishes us that we must not go at it in an impetuous, haphazard manner. The fullest investigation and deliberation are

essential to its successful prosecution. For this purpose, and for the purpose of arousing public interest, a State organization will be necessary. The experience of others should be gathered and utilized to the fullest extent. We must not repeat the old acrobatic feat of jumping out of the frying pan into the fire. It should be taken up in a business way, or we had much better leave it as it is.

JANUARY 26—AFTERNOON SESSION.

Reports of committees on permanent organization and resolutions were received.

Mr. A. B. Choate moved the appointment of a committee of five on legislation, and the chairman appointed A. B. Choate and John Rees, of Minneapolis; D. J. Buell and F. L. Hoxsie, of St. Paul; and —

Mr. Strobeck, of Meeker County, offered a resolution, which was adopted, recommending the use of wide tires.

Mr. Arnold, of Redwood County, offered a resolution on drainage, which was also adopted.

Mr. Rufus Cook, of Minneapolis, then read a paper on "Stone Roads," which he failed to return to the secretary.

Mr. J. T. Little, of Dodge County, offered a resolution suggesting that planks of sufficient thickness to carry threshing outfits be used on all bridges. Adopted.

ELECTION OF OFFICERS.

The following officers of the Minnesota State Good Roads Association were then elected by unanimous vote:

President, A. B. Choate, Minneapolis.

Treasurer, E. J. Hodgson, St. Paul.

Secretary, F. L. Hoxsie, St. Paul.

Vice-presidents, one for each county.

Chairman Wells expressed the belief that the dissemination of the proceedings of this convention will do a great deal to improve the roads of Minnesota by shaping public opinion.

JANUARY 26—EVENING SESSION.

At 8 o'clock the convention met in the hall of representatives to listen to an illustrated paper by Mr. Isaac B. Potter, of New York City.

Mr. Swett, of Minneapolis, moved a vote of thanks to Judge Wells for the successful manner in which he had presided over this convention; and Mr. Grant, of Pine County, moved a similar vote to Mr. Choate and Mr. Hoxsie, who have labored indefatigably for the success of this convention, also to the wheelmen who set it in motion; both of which were carried.

The convention then adjourned *sine die*.

